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EXAMINER	
PROCTOR, JASON SCOTT	
ART UNIT	**PAPER NUMBER**
2123	

DATE MAILED: 11/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/786,440	KROGER ET AL.	
	Examiner	Art Unit	
	Jason Proctor	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-68* is/are pending in the application.

4a) Of the above claim(s) *1-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *46-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-45 have been canceled by preliminary amendment dated August 5, 2002. Claims 46-68 have been rejected.

Priority

2. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged to US Provisional application number 60/098,788 filed on September 1, 1998.

Specification

3. The disclosure is objected to because of the following informalities: Page 7 appears to begin by repeating half of the last paragraph from page 6. Pages 30-35 appear to be duplicates of pages 26-29.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. § 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 46-55 and 62-68 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

6. Claims 46-49 recite limitations directed toward a method that, given the broadest reasonable interpretation, encompass a human being. The method has no clear

tangible result except in claim 48, which recites "manufacturing the article of manufacture using the specific parts in the corresponding locations," however the disclosure is not enabling for this limitation. The connection between the step of manufacturing the article of manufacture and the prior abstract method steps is therefore so tenuous that the claim, when considered as a whole, does not constitute a proper method under the statute. See *In re Sarkar*, 200 USPQ 132 (CCPA 1978).

7. Claims 50-55 similarly recite limitations directed toward a method that, given the broadest reasonable interpretation, encompass a human being. The method has no clear tangible result. See MPEP 2106.

8. Claims 62-64 and 65-68 are directed toward a computer program *per se* although stored on a storage medium. The claimed invention is thus a particular data structure stored on a storage medium and therefore nonstatutory functional descriptive material. The limitations that detail the capabilities of various program modules are acknowledged however they do not limit the invention to its functional interaction with the tangible embodiment on a computer system. See MPEP 2106(IV)(B).

9. To expedite a complete examination of the instant application the claims rejected under 35 U.S.C. § 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 46-68 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

12. Claims 46 and 48-68 recite limitations related to evaluating code rules or asserting that only one design variant for a given position is selected. The specification at page 12, lines 22-27 discloses the use of XOR (exclusive-or) to ensure that only one of several variables is true, implying that only one option has been selected. While the examiner understands the intention is to have a set of options which are mutually exclusive, using the XOR operator as disclosed will be true of an odd number of options are selected rather than true if only one option is selected. In applicant's example, S $\oplus$ C1 $\oplus$ C2, the result will be true if one or three of the variables are true. As a result, it is unclear how the disclosed invention can achieve its intended function, and claims which rely on the evaluation of rules or determination of design variants are supported by inadequate written description in the disclosure.

13. Claims 48 and 56 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the

invention. Claim 48 recites the limitation "manufacturing the article of manufacture using the specific parts in the corresponding locations" while claim 56 recites the limitation "the particular design variant defined by a specific order being manufactured using the parts indicated for that specific order". The disclosure contains insufficient enablement for manufacturing technology to support claim limitations that so broadly produce an article of manufacture. While it is appreciated that applicant's invention is a tool that assists in the manufacturing process, it does not actually manufacture the articles for which it stores, processes, executes, or otherwise manipulates data. When an invention, in its different aspects, involves distinct arts, the specification is enabling if it enables those skilled in each art, to carry out the aspect proper to their specialty. See MPEP 2164.05(b).

14. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

15. Claims 48, 56, and 64 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

16. Regarding claims 48 and 56, claim 48 recites the limitation "manufacturing the article of manufacture using the specific parts in the corresponding locations" while claim 56 recites the limitation "the particular design variant defined by a specific order being manufactured using the parts indicated for that specific order". In both cases, it is unclear whether the applicant intends that the article of manufacture be produced by a

process known in the art or whether using the invention constitutes a new method of manufacture.

17. Claim 64 recites the limitation "manufacturing program module" in line 5. There is insufficient antecedent basis for this limitation in the claim. Examiner interprets this term as "program module" for the remainder of this action.

18. Claim 64 recites the limitation "the manufacturing program module using the identified method to join the respective identified parts". It is unclear whether "join" in this limitation is intended to mean "linking the data representations of the parts in the computer program" or "physically connecting the parts". Other claims recite limitations including the article of manufacture, so it would seem to the examiner that the applicant may have considered the scope of the disclosure broad enough to include physically connecting the parts to be manufactured. Clarification is respectfully requested.

19. Claim 67 recites the limitation "the mapping program module" in line 6. There is insufficient antecedent basis for this limitation in the claim. Examiner interprets this term as "the program module which maps the evaluations of the unique code rules of the corresponding code rules in the position variant definitions in the BOM" as recited in claim 65.

Claim Interpretation

20. In the interest of compact prosecution, examiner makes the following claim interpretations in order to apply prior art to the claims. See *Ex parte Ionescu*, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984).

21. Regarding claims 48 and 56, examiner regards the limitations of manufacturing the article of manufacture as being taught by applicant's admission in the specification at page 2, lines 1-11.

22. Regarding claim 64, the limitation "the manufacturing program module using the identified method to join the respective identified parts" is interpreted as "linking the data representations of the parts in the computer program".

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

24. Claims 46-48, 50-53, 56-59, and 62-65 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. US Patent No. 5,295,067 in view of Ferriter et al. US Patent No. 4,847,761.

25. Regarding claim 46, Cho et al. teaches a method of representing an article of manufacture having a plurality of structural design variants (column 2, line 58 – column 3, line 16) and defining a plurality of links between pairs of components (column 4, lines 9-49).

26. Cho et al. does not expressly disclose defining a plurality of positions corresponding to a different predefined location one the article of manufacture, nor assigning at least one position variant to each position identifying a specific part.

27. Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

28. It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

29. Concerning the limitation of "providing a specific part associated with each selected position variant; and manufacturing the article of manufacture using the specific parts in the corresponding locations," applicant admits that it is known in the art to use a manufacturing resource planning system in combination with traditional manufacturing technology (page 2, lines 1-11).

30. Regarding claim 47, neither Cho et al. nor Ferriter et al. expressly teaches assigning a connection variant to each link to specify a particular method of joining two parts. However, it would have been obvious to a person of ordinary skill in the art in combination with his own knowledge of the particular art to augment the meaning of the links in a tree structure to include data relating to the nature of the connection between

the elements. By virtue of being a tree structure, the links between nodes establish that a relationship exists. It would have been obvious to assign meaning to those links, such as the method of joining the parts, since the presence of the link itself indicates that the parts are joined. Further, Cho et al. acknowledges that production engineering systems of prior art specify the relationships between components and seeks to improve upon this art (column 2, lines 58-65).

31. Regarding claim 48, Cho et al. teaches forming a code rule indicating whether the particular variants should be selected as well as evaluating the code rule to identify a specific part for use in a location (column 5, line 43 – column 6, line 9).

32. Regarding claim 50, Cho et al. teaches a method for determining manufacturing parts requirements for an article of manufacture having a plurality of structural design variants comprising analyzing an order, evaluating rules to determine features in accordance with the rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

33. Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and

producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

34. It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

35. Regarding claim 51, Cho et al. teaches that the rule comprises at least one element corresponding to a selectable design option (column 4, lines 9-49) and teaches that the orders may be contained in an order matrix (column 7, lines 33-48; column 8, lines 28-33) described as a particular format that can be encoded and evaluated using batch processing. It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge of the particular art to use an order matrix to fulfill the teachings of Cho et al. regarding a format that can be encoded and evaluated using batch processing.

36. Regarding claims 52 and 53, Cho et al. teaches evaluating rules by dividing the rule into its discrete rule elements, linking each element with order data for the corresponding element, and evaluating each rule in accordance with the with the order data linked to the discrete elements (column 4, lines 9-49; column 6, lines 1-42). These steps are well known in the art for evaluating a series of conditional and assignment

statements in any number of well-known programming languages. For example, see Sebesta regarding Parse Trees and related topics, pages 113-123.

37. Regarding claim 56, Cho et al. teaches a method for determining manufacturing parts requirements for an article of manufacture having a plurality of structural design variants comprising analyzing an order, evaluating rules to determine features in accordance with the rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

38. Cho et al. does not expressly disclose that the method is embodied on a system comprising a computer with a processor and memory, however does teach a knowledge based system (column 5, lines 35-42), the interpreted meaning of which includes a computer system, and makes reference to storing data in integer index terms (column 6, lines 23-45). Thus it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention that the method of Cho et al. could be directly implemented on a computer system with a processor and memory in order to use the method as intended.

39. Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and

producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

40. It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

41. Cho et al. teaches producing an output indicating for each order the appropriate parts for use in the corresponding particular design variant of the article (column 3, lines 63 – column 4, line 8) referring to such output as a bill of materials.

42. Concerning the limitation of "the particular design variant defined by a specific order being manufactured using the parts indicated for that specific order," applicant admits that it is known in the art to use a manufacturing resource planning system in combination with traditional manufacturing technology (page 2, lines 1-11).

43. Regarding claim 57, Cho et al. teaches mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

44. Regarding claim 58, Cho et al. teaches that each code rule comprises at least one code rule element (column 4, lines 9-49), that each design option corresponds to a respective code rule element (column 4, lines 9-49), and that the orders may be

contained in an order matrix (column 7, lines 33-48; column 8, lines 28-33) described as a particular format that can be encoded and evaluated using batch processing. It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge of the particular art to use an order matrix to fulfill the teachings of Cho et al. regarding a format that can be encoded and evaluated using batch processing.

45. Further, Cho et al. teaches linking the code rule elements with order data for the corresponding code rule element in the particular format (column 4, lines 9-49) as well as evaluating each code rule in accordance with the order data linked to the associated discrete code rule elements (column 4, lines 9-49).

46. Regarding claim 59, Cho et al. teaches evaluating rules by dividing the rule into its discrete rule elements, linking each element with order data for the corresponding element, and evaluating each rule in accordance with the with the order data linked to the discrete elements (column 4, lines 9-49; column 6, lines 1-42). These steps are well known in the art for evaluating a series of conditional and assignment statements in any number of well-known programming languages. For example, see Sebesta regarding Parse Trees and related topics, pages 113-123.

47. Regarding claim 62, Cho et al. teaches a method of representing an article of manufacture having a plurality of structural design variants (column 2, line 58 – column 3, line 16) and defining a plurality of links between pairs of components (column 4, lines 9-49).

48. Cho et al. does not expressly disclose defining a plurality of positions corresponding to a different predefined location one the article of manufacture, nor assigning at least one position variant to each position identifying a specific part.

49. Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

50. It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

51. The limitation of "assigning each position a unique position ID" would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge in the particular art in light of the well-known requirement of uniquely identifying memory locations for storing data on a computer system. Failure to grant each position a unique position ID at some level of implementation would eliminate the ability to address each position independently and

call into question whether a plurality of positions that share a position ID are distinct or whether they refer to a single position.

52. Cho et al. teaches evaluating rules to determine features in accordance with the rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

53. Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however the combination with the invention of Ferriter et al. formed above would make this feature an obvious implementation detail of the combination.

54. Cho et al. teaches evaluating rules by dividing the rule into its discrete rule elements, linking each element with order data for the corresponding element, and evaluating each rule in accordance with the with the order data linked to the discrete elements (column 4, lines 9-49; column 6, lines 1-42). These steps are well known in the art for evaluating a series of conditional and assignment statements in any number of well-known programming languages. For example, see Sebesta regarding Parse Trees and related topics, pages 113-123.

55. Cho et al. does not expressly disclose that the method is stored as a computer program and is executed by the processor to manipulate stored data, however does teach a knowledge based system (column 5, lines 35-42), the interpreted meaning of which includes a computer system, and makes reference to storing data in integer index terms (column 6, lines 23-45). Thus it would have been obvious to a person of ordinary

skill in the art at the time of applicant's invention that the method of Cho et al. could be directly implemented on a computer system as a stored program in order to use the method as intended.

56. Regarding claim 63, Cho et al. teaches defining a plurality of links between pairs of components (column 4, lines 9-49).

57. Cho et al. does not expressly disclose defining a plurality of positions corresponding to a different predefined location one the article of manufacture, however the combination with the invention of Ferriter et al. formed above would make this feature an obvious implementation detail of the combination.

58. Regarding claim 64, neither Cho et al. nor Ferriter et al. expressly teaches assigning a connection variant to each link to specify a particular method of joining two parts. However, it would have been obvious to a person of ordinary skill in the art in combination with his own knowledge of the particular art to augment the meaning of the links in a tree structure to include data relating to the nature of the connection between the elements. By virtue of being a tree structure, the links between nodes establish that a relationship exists. It would have been obvious to assign meaning to those links, such as the method of joining the parts, since the presence of the link itself indicates that the parts are joined. Further, Cho et al. acknowledges that production engineering systems of prior art specify the relationships between components and seeks to improve upon this art (column 2, lines 58-65). When evaluating rules indicating which design variants are compatible, as disclosed by Cho et al. (column 4, lines 9-49), combined with the obvious advantage of assigning connection data to the links, it would have been

obvious to a person of ordinary skill in the art at the time of applicant's invention to include connection rules among the existing rules to enable the system to validate not only the design variants but also the connections between components.

59. Regarding claim 65, Cho et al. teaches a method for determining manufacturing parts requirements for an article of manufacture having a plurality of structural design variants comprising analyzing an order, evaluating rules to determine features in accordance with the rules, mapping the evaluations of the rules to the bill of materials, and selecting the appropriate features to include on the bill of materials (column 3, line 42 – column 4, line 31).

60. Cho et al. does not expressly disclose assigning features to predetermined positions corresponding to a physical location in the article of manufacture, however Ferriter et al. teaches defining a plurality of positions and assigning at least one position variant to each position as described above (Figures 2, 7, 8; column 2, line 13 – column 3, line 13). Both Cho et al. and Ferriter et al. teach inventions for managing and producing bills of materials and the use of tree structures and their advantages are well known to those of ordinary skill in the art.

61. It would have been obvious for a person of ordinary skill at the time of applicant's invention to combine the tree structure for representing data taught by Ferriter et al. with the method of representing an article of manufacture taught by Cho et al. to clearly convey the structural relationship of the product to the user or to better facilitate intensive computation on the numerous options selected for a given product. The

combination could be achieved by including an internal tree data structure and a corresponding display method in the invention of Cho et al.

62. Cho et al. does not expressly teach that the orders are contained in an order matrix, however does teach that the orders may be contained in a particular format that can be encoded and evaluated using batch processing (column 7, lines 33-48; column 8, lines 28-33). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention in combination with his own knowledge of the particular art to use an order matrix to fulfill the teachings of Cho et al. regarding a format that can be encoded and evaluated using batch processing.

63. Cho et al. does not expressly disclose that the method is stored as a computer program and is executed by the processor to manipulate stored data, however does teach a knowledge based system (column 5, lines 35-42), the interpreted meaning of which includes a computer system, and makes reference to storing data in integer index terms (column 6, lines 23-45). Thus it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention that the method of Cho et al. could be directly implemented on a computer system as a stored program in order to use the method as intended.

64. Claim 49 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 46 above, and further in view of Cornett et al. US Patent No. 5,216,612.

65. Regarding claim 49, neither Cho et al. nor Ferriter et al. expressly teaches assigning component documentation data to a predetermined set of position variants. Cornett et al. teaches storing a parts manual for a bill of materials for a machine (column 3, lines 7-33). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to combine the documentation such as a parts manual for a bill of materials as taught by Cornett et al. with the combined invention used to reject claim 46 above in order to unify the documentation requirements and manufacturing resource planning requirements. This combination could be achieved by including a reference in the position variant data to the relevant documentation data.

66. Cornett et al. also teaches defining assemblies (column 3, lines 7-33). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to combine the concept of assemblies as taught by Cornett et al. with the tree structure of Cho et al. in view of Ferriter et al. as both are hierarchical data structures that facilitate information encapsulation and assist the user in understanding the design. This combination could be achieved by constructing the tree structure taught by Ferriter et al. to correspond to an assembly structure.

67. Cho et al. teaches determining a particular variant defined by selected design options (column 5, line 43 – column 6, line 9).

68. Cornett et al. teaches aggregating and storing the documentation data by representing it as a hierarchical listing (column 3, lines 7-33).

69. Claims 54 and 55 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 51 above, and further in view of Zweben et al. US Patent No. 6,216,109.

70. Regarding claim 54, neither Cho et al. nor Ferriter et al. expressly teaches a position variant that has an associated validity period.

71. Zweben et al. teaches a resource planning tool (column 1, lines 15-25) wherein tasks have a valid time period constraint (column 14, lines 30-46). Although Zweben et al. is concerned with scheduling maintenance rather than allocating construction components, the notion of a valid time period as applicable to the inventions of Cho et al. and Ferriter et al. would be obvious to a person of ordinary skill in the art. Cho et al. expressly acknowledges that design changes occur and cause synchronization problems between databases (column 2, lines 34-65). Further, all three references are concerned with resource planning and allocation making the concept taught in one reference readily adaptable for use in combination with the others. In this case, the combination of a valid time period as taught by Zweben et al. could be achieved by including the a reference in the position variant data to the relevant valid time period data.

72. Regarding claim 55, Zweben et al. teaches that tasks are given temporal constraints which order them with respect to each other (column 14, lines 30-46). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include temporal constraints as means of efficient time management when designing a manufacturing resource planning tool such as that of Cho et al. or Ferriter et

al. The combination could be achieved by including a reference in the position variant data to the temporal constraint, thus enabling the system to schedule the orders according to the valid time period data of the components on the bill of materials.

73. Claims 60 and 61 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 57 above, and further in view of Zweben et al.

74. Regarding claim 60, neither Cho et al. nor Ferriter et al. expressly teaches a position variant that has an associated validity period.

75. Zweben et al. teaches a resource planning tool (column 1, lines 15-25) wherein tasks have a valid time period constraint (column 14, lines 30-46). Although Zweben et al. is concerned with scheduling maintenance rather than allocating construction components, the notion of a valid time period as applicable to the inventions of Cho et al. and Ferriter et al. would be obvious to a person of ordinary skill in the art. Cho et al. expressly acknowledges that design changes occur and cause synchronization problems between databases (column 2, lines 34-65). Further, all three references are concerned with resource planning and allocation making the concept taught in one reference readily adaptable for use in combination with the others. In this case, the combination of a valid time period as taught by Zweben et al. could be achieved by including the a reference in the position variant data to the relevant valid time period data.

76. Regarding claim 61, Zweben et al. teaches that tasks are given temporal constraints which order them with respect to each other (column 14, lines 30-46). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include temporal constraints as means of efficient time management when designing a manufacturing resource planning tool such as that of Cho et al. or Ferriter et al. The combination could be achieved by including a reference in the position variant data to the temporal constraint, thus enabling the system to schedule the orders according to the valid time period data of the components on the bill of materials.

46. Claims 66-68 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cho et al. in view of Ferriter et al. as applied to claim 65 above, and further in view of Zweben et al.

77. Regarding claim 66, neither Cho et al. nor Ferriter et al. expressly teaches a position variant that has an associated validity period.

78. Zweben et al. teaches a resource planning tool (column 1, lines 15-25) wherein tasks have a valid time period constraint (column 14, lines 30-46). Although Zweben et al. is concerned with scheduling maintenance rather than allocating construction components, the notion of a valid time period as applicable to the inventions of Cho et al. and Ferriter et al. would be obvious to a person of ordinary skill in the art. Cho et al. expressly acknowledges that design changes occur and cause synchronization problems between databases (column 2, lines 34-65). Further, all three references are concerned with resource planning and allocation making the concept taught in one

reference readily adaptable for use in combination with the others. In this case, the combination of a valid time period as taught by Zweben et al. could be achieved by including the a reference in the position variant data to the relevant valid time period data.

79. Regarding claim 67, Zweben et al. teaches that tasks are given temporal constraints which order them with respect to each other (column 14, lines 30-46). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include temporal constraints as means of efficient time management when designing a manufacturing resource planning tool such as that of Cho et al. or Ferriter et al. The combination could be achieved by including a reference in the position variant data to the temporal constraint, thus enabling the system to schedule the orders according to the valid time period data of the components on the bill of materials.

80. Regarding claim 68, Zweben et al. teaches constructing revised schedules to correct constraint violations (Figure 5; column 17, line 53 – column 18, line 27). It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to include this feature when combining the teachings of Zweben et al. with the combined invention of Cho et al. in view of Ferriter et al. as above in order to fully support the teachings of Zweben et al. and to realize the full potential of the temporal constraints. The combination could be achieved by repeating the mapping steps after the timing constraints have been resolved.

Conclusion

Art considered pertinent by the examiner but not applied has been cited on form PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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